03 04 06 19	CC	Reading you a lot better, Bill. How are you reading me?
03 04 06 25	LMP	I'm reading you five - loud and clear, and you copying our low bit data to record these tracking passes? Over.
03 04 06 35	CC	That is affirmative. We are getting low bit data now.
03 04 06 41	LMP	Okay. I've played - run the tape recorder back to the beginning. We have quite a bit of high bit, so all you'll have to do is start recording when you are ready.
03 04 06 55	CC	Roger. Stand by one, Bill.
03 04 07 27	CC	Apollo 8, Houston. Stand by one on the tape recorder dump. We would like you to look at your steam pressure. We think that the primary evaporator may have dried out, and if the steam pressure shows off-scale low, would you please close the back pressure valve and reservice the evaporator? Over.
03 04 07 50	CDR	Roger.
03 04 08 49	CC	Apollo 8, Houston. We are ready to send you the P27 LM state vector update when you are ready. Over.
03 04 08 58	CDR	You will have to wait until this tracking exercise is over with, Mike.
03 04 09 02	CC	Roger. Thank you.

03 04 18 09	LMP	Apollo 8.
03 04 18 14	CC	Apollo 8, this is Houston. Were you calling? Over.
03 04 18 19	LMP	Roger. You can go ahead now and give you computer and get the updates, and let's get going on the PAD messages.
03 04 18 26	CC	Roger.
03 04 18 36	LMP	It is in POO and ACCEPT.
03 04 18 44	LMP	Okay, Houston. Are you ready to talk about the water boiler problem?
03 04 18 49	CC	Roger. We copy you in POO and ACCEPT, and we are sending you a P27 lens state vector. On the water boiler, it looks to us like the evaporator has been reserviced. How does it look to you? Over.
03 04 19 06	LMP	Roger. I reserviced it, put it to AUTO - H_2O flow to AUTO; and the steam pressure went to zero again. So I tried reservicing it the second time for 1 minute, and again no results. I'm in the present process of closing the back pressure valve manually. Over.
03 04 19 25	CC	Roger. Understand you tried to reservice it twice, both times steam pressure has gone to zero, and now you are closing the back pressure valve manually.
03 04 19 36	LMP	Roger. Each time I have reserviced it, the steam pressure came up to about 0.07 to 0.1; but as soon

		as the steam and water were put to AUTO, the steam pressure went right back down again.
03 04 20 01	CC	Roger. We copy, and we are reading you loud and clear now, Bill. On your map update, did you copy that that I gave you previously?
03 04 20 13	CMP	Negative. We have not copied it yet.
03 04 20 14	LMP	Negative.
03 04 20 17	CC	Okay. I have it for you again when you are ready to copy.
03 04 20 24	CMP	Ready to copy.
03 04 20 26	CC	This is a map update for REV's 4/5: LOS 76:59:59, sunrise 77:09:06, prime meridian 77:15:47, AOS 77:45:50, sunset 78:22:03; remarks: IP-1, acquisition time for CP2 is 77:29:42, IP-1 time closest approach for target B1 78:10:25. Over.
03 04 21 27	CDR	Roger. LOS 76:59:59, sunrise 77:09:06, 77:45:47, 77:45:50, 78:22:03; IP-1, CP2 77:29:42, IP-1 TCA for B1 78:10:25.
03 04 21 52	CC	That's right, and the prime meridian time is 77:15:47, and you got your computer back. We've got a good P27 update.
03 04 22 04	CDR	Okay. We will go to POO and TRANSFER.
03 04 22 07	CC	Roger.
03 04 22 45	CDR	Houston, do you have a TEI 5 for us?
03 04 22 48	CC	We are working on it now, Frank. Have it for you momentarily.

03 04 22 56	CDR	Roger.
03 04 23 27	CC	Apollo 8, Houston.
03 04 23 32	LMP	Go.
03 04 23 33	CC	Roger. On your back pressure valve, we would like to know how long after you closed the back pressure valve the firt time - how long it was from the time you closed it until the time you started the reservicing? We would like for you to wait about 15 minutes to prevent any ice from forming due to flash freezing. Over.
03 04 23 59	LMP	Okay. I started immediately to reservice it.
03 04 24 17	CC	Apollo 8, Houston. We show that you closed it this last time about 4 minutes ago, so we would like you to wait another 15 minutes and then try to reservice it again at that time and then go to AUTO. Over.
03 04 24 41	LMP	Roger.
03 04 24 43	CC	Roger. Thank you. The TEI 4 PAD which you have is still valid. We will have a TEI 5 PAD for you shortly.
03 04 24 55	LMP	Roger. Be advised we are presently in steam pressure MANUAL, and we're in H_2O flow AUTO, and are now in H_2O flow OFF, as of about 5 seconds ago.
03 04 25 15	CC	Roger. We copy that, Bill. And we confirm that's a good configuration.
03 04 25 28	LMP	Right now, I've got the H_2O flow OFF. Do we stay that way?

03 04 25 32	CC	Affirmative.
03 04 25 45	CC	Apollo 8, Houston. On your television update, we propose that you start the TV at the flight plan time of 85 hours 37 minutes and simply extend the stop time a few minutes. You're currently scheduled to stop at 86 hours, and we would like to keep it going until the terminator, which should be approximately 86:14. Over.
03 04 26 13	CDR	Roger.
03 04 26 27	CC	Frank, I know you are busy up there. We've got the daily news for you whenever and if ever you'd like to hear it.
03 04 26 38	CDR	I'll give you a call.
03 04 27 46	CC	Apollo 8, this is Houston.
03 04 27 51	CDR	Go ahead.
03 04 27 53	CC	I have the TEI 5 PAD for you whenever you are ready to copy.
03 04 28 05	CDR	Okay. Go ahead.
03 04 28 07	CC	Okay. TEI 5, SPS/G&N: 47 correction - 45701, minus 043, plus 116 07921 2603. Are you with me so far?
03 04 28 41	CDR	Roger.
03 04 28 43	CC	Plus 31171, minus 00767, minus 00214 180 017 001, not applicable, plus 00188 31181 259 31003. Are you with me? Over.
03 04 29 44	CDR	Roger.

END OF TAPE

03 04 29 47	CC	Roger. 40 2711 398 033, down 043, left 23, plus 0832 minus 16500 12956 36208 146 3944; north set of stars remain Sirius and Rigel; roll, pitch, and yaw remain same angles: 129 155 010, ullage remains two quads for 20 seconds, quads B and D; horizon on 4-degree line at TIG minus 3 minutes. Over.
03 04 31 14	CDR	Roger. Here we go: TEI 5, SPS/G&N 45701, minus 043, plus 116 07921 2603, plus 31171, minus 00767, minus 00214 180 017 001, NA, plus 00188 31181 259 31003 40 2711 398 033, down 043, left 23, plus 0832, minus 16500, plus 12956 36208 146 3944. Set stars are the same; ullage - we'd like - do you have any objection to using four quads for 15 seconds?
03 04 32 23	CC	No objection to four-quad ullage, Apollo 8.
03 04 32 28	CDR	Okay. We'd like to just go ahead and use four quads all times, unless we get a lot shorter on fuel than we are now.
03 04 32 34	CC	Understand.
03 04 32 39	CDR	And is that 15 seconds?
03 04 32 42	CC	Affirmative: 15 seconds, four quads.
03 04 32 49	CC	Apollo 8 - -
03 04 32 50	CDR	Thank you, and horizon is 4 degrees at minus - -
03 04 32 54	CC	That readback is correct, Frank, and we'd like to advise that the voice quality on that high bit rate is excellent. Over.

03 04 33 04	CDR	Thank you. Mike, it's four quads for 15 seconds. Is that right?
03 04 33 12	CC	That is affirmative, Apollo 8: four quads for 15 seconds.
03 04 33 18	CDR	Thank you.
03 04 33 45	CC	Apollo 8, Houston.
03 04 33 50	CDR	Go ahead, Houston. Apollo 8.
03 04 33 53	CC	Roger for Bill. He can go ahead and do his standard reservice on the water now. It's looking good.
03 04 36 05	CDR	Okay. You want us to reservice it now?
03 04 36 07	CC	That's affirmative, and upon completion, go back to AUTO.
03 04 36 19	LMP	Roger.
03 04 40 21	CC	Apollo 8, Houston.
03 04 40 27	CDR	Go ahead, Houston.
03 04 40 28	CC	Roger. We are still dumping your tapes. The voice quality on high bit is coming through superb, and you are GO for the next rev. And we would like to get a brief status report on your rest between 60 hours and LOI 1, just to fill in some information for us.
03 04 40 56	CDR	We only got a couple hours rest.
03 04 40 58	CC	Okay.
03 04 41 06	CDR	We're tired right now, but we will have to wait until TEI before we get back to the regular cycle.

03 04 41 12	CC	Alright. I suspect you're right.
03 04 41 17	LMP	Okay, Houston. The water boiler has been re-serviced, back pressure valve CLOSED for 1 minute, water ON for 2, and it's now steam pressure AUTO, H_2O flow AUTO.
03 04 41 30	CC	Roger. We copy, Bill.
03 04 41 56	LMP	If we have a problem, a similar problem, again on the back side in the sunlight, might be a good idea to crank the secondary loop until we have AOS. What do you think about that?
03 04 42 11	CC	Stand by one, Bill.
03 04 43 17	CC	Apollo 8, Houston.
03 04 43 23	CMP	Go ahead, Houston. Apollo 8.
03 04 43 25	CC	Roger, Jim. In regard to your evaporator, we feel that if you do have a similar problem next time on the back side in sunlight, check the evaporator outlet temperature, and if it gets above 60, we concur that it would be a good idea to bring up the secondary loop. Over.
03 04 43 47	CMP	Roger.
03 04 44 17	CC	Apollo 8, Houston. When we say bring up the secondary loop, we mean bring up the evaporator only on the secondary loop. Copy?
03 04 44 28	CDR	Roger.
03 04 44 29	CMP	Roger.

03 04 49 51	LMP	Houston, Apollo 8. We got time for a little news?
03 04 49 56	CC	Apollo 8, this is Houston. Over.
03 04 50 02	LMP	I say how about a little bit of that news you promised?
03 04 50 05	CC	Roger. We got the Interstellar Times here, the December 24 edition. Your TV program was a big success. It was viewed this morning by most of the nations of your neighboring planet, the earth. It was carried live all over Europe, including even Moscow and East Berlin, ~~also in Japan and~~ all of North and Central America and parts of South America. We don't know yet how extensive the coverage was in Africa. Are you copying me all right? Over.
03 04 50 38	CDR	You are loud and clear.
03 04 50 38	CC	Good. San Diego welcomed home today the Pueblo crew in a big ceremony. They had a pretty rough time of it in the Korean prison. Christmas cease-fire is in effect in Viet Nam, with only sporadic outbreaks of fighting. And if you haven't done your Christmas shopping by now, you better forget it.
03 04 51 02	LMP	Thank you.
03 04 51 04	CC	A couple of Oilers made the All-Star team, Webster and Farr.

03 04 51 14	LMP	Roger.
03 04 51 22	CC	And that's about all our news. How about your news?
03 04 51 28	CDR	Well, we'll be looking forward to a big burn here shortly.
03 04 51 34	CC	Roger.
03 04 51 39	CMP	Mike, I think I can say it without contradiction, it's been a mighty long dry spell up here.
03 04 51 48	CC	I guess you can say anything you like without contradiction.
03 04 51 56	CDR	When can we dump water, Houston?
03 04 52 00	CC	Say again, Frank.
03 04 52 04	CDR	When can we dump water?
03 04 52 06	CC	Stand by.
03 04 53 32	CC	Apollo 8, Houston.
03 04 53 38	CDR	Go, Houston.
03 04 53 39	CC	We will get you the number after a while on your water dump. It looks like the quantity isn't increasing very slightly, and we're considering not only the quantity in regard to the dump, but also its effects on the trajectory relative to TEI and so forth, but we will have a good answer for you shortly.
03 04 54 00	CDR	We are not just thinking about the waste water tank: we're thinking about some other kind of

water that has to get dumped out of the space- urine
craft, slightly used water. ?

03 04 54 11	CC	Roger. We understand.
03 04 56 30	CC	Apollo 8, Houston.
03 04 56 35	CDR	Go ahead.
03 04 56 36	CC	Roger. We have about three and a half minutes to LOS. We give you back the DSE under your control, and in regard to your water dump, we are tentatively predicting a waste water tank dump at about 80 hours GET and any other dumps are at your discretion, any time you would like to make them.
03 04 57 00	CDR	Thank you.
03 04 57 08	CC	People listening to the high bit rate down here say it's like sitting in your living room listening to good hi-fi.
03 04 57 21	CDR	Sounds like a good idea.
03 04 58 03	CC	Apollo 8, Houston. Coming up on 2 minutes to LOS. We got a good reservice on the primary evaporator, and everything is still looking very good down here.
03 04 58 16	CDR	Okay. Thank you.
03 04 59 12	CC	Apollo 8, Houston. One minute to LOS. Are you still reading us loud and clear?
03 04 59 18	CDR	Loud and clear. Loud and clear.

03 04 59 20	CC	Okay, fine. We've been noticing a little bit of increase in our background noise as you approach backside.
03 04 59 30	CDR	Roger. We had to go off the high gain. That's why.
03 04 59 35	CC	Roger.
03 04 59 44	CC	Have a good backside; we'll see you next time around.
03 04 59 49	CDR	Okay, Mike.
03 05 29 XX		BEGIN LUNAR REV 5
03 05 46 48	CC	Apollo 8, this is Houston. Over.
03 05 47 05	LMP	Houston, Apollo 8. Go ahead.
03 05 47 07	CC	Roger. Read you loud and clear. Welcome back.
03 05 47 13	LMP	Roger. Looks like the evaporator - looks like the evaporator is holding okay, or at least it is trying to. It dropped the temperature down to about 32, and now it's come back up again and stabilized at about 42 degrees.
03 05 47 31	CC	Roger. Copy you, Bill.
03 05 48 41	CMP	Houston, Apollo 8.
03 05 48 44	CC	Apollo 8, Houston.
03 05 48 50	CMP	Roger. Houston, this is Apollo 8. What we are doing on the control point tracking - I managed to look for a CP-1 at the same time we were trying to do a CP-2 on this rev. I picked up two

marks which are just as small, but more easily recognizable, than the ones that were given to me. I know that I can repeat the process and pick the same small point on the next rev. Now I can try to look for the control points that are written down, but I think that I have better control over the ones that we have.

03 05 49 29	CC	Roger, Jim. Understand. We'll check that for you.
03 05 49 34	CMP	Roger. One more point: the control point times which you have given me are a little bit off, and I can notice by comparing these maps that these maps are not too well aligned either.
03 05 49 47	CC	Roger. These two small points that you can repeat your marks on: will you be able to identify those precisely on a map? Over.
03 05 50 00	CMP	That's affirmative; that is why I picked them. They are both - they're both very prominent features, and they are both very small craters about the same size as the ones we are looking for, but I can pinpoint them on a map.
03 05 50 13	CC	Roger.
03 05 50 48	CMP	Houston, Apollo 8.
03 05 50 49	CC	Apollo 8, Houston. Over.
03 05 50 54	CMP	Roger. One more comment: as if it offered a lot of controversy at data priority meanings,

it looks like 10 degrees pitch up is the best attitude to obtain the horizon so that you can follow the landmark down through the scanning telescope. If you pitch down any more, full up trunnion will not get the horizon, and the horizon is a great help in leading yourself into the control point.

03 05 51 28	CC	Roger. Understand.
03 05 52 40	CC	Apollo 8, Houston.
03 05 52 45	CMP	Go ahead.
03 05 52 47	CC	Jim, we concur with your use of the two small craters which you can repeatedly mark on and find on the map; and also if you will give us your new latitudes and longitudes we can compute for you a time of closest approach to those points with the spacecraft 10 degrees pitched-up. Over.
03 05 53 12	CMP	Roger, Houston. CP-1 latitude minus 606269, longitude over 2, minus 78954, altitude plus 00152; for CP-2 latitude minus 09638, longitude over 2, plus 81691, altitude minus 00007. I tried to get CP3 at the same pass, but I let it go by to get set up for this first track at the landing site.

03 05 54 05	CC	Roger, Houston. CP-1: would you say again the latitude, and on CP-2, say again the longitude CP2, please?
03 05 54 15	CMP	Roger. CP-1 latitude minus 06269; that is the latitude; and for longitude over 2 for CP-2, plus 81691.
03 05 54 34	CC	Okay. We copied them. Thank you.
03 05 54 43	CMP	And it appears that resolve medium is a very good combination to track.
03 05 54 53	CC	Roger. I understand. Resolve medium.
03 05 54 59	CMP	And it appears so far, Houston, that no spacecraft pitch motion is required to get five marks on the target in plenty of time.
03 05 55 10	CC	Roger. I understand you require no spacecraft motion to get five marks.

END OF TAPE

APOLLO 8 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

03 06 04 15	CC	Apollo 8, Houston.
03 06 04 20	CMP	Go ahead.
03 06 04 21	CDR	Go ahead, Houston.
03 06 04 23	CC	Roger. I am about 15 minutes early with the TEI fix update and the map update. I will have them here whenever it's convenient for you to copy.
03 06 04 36	LMP	Okay. Just a little bit, Mike.
03 06 13 28	CC	Apollo 8, Houston.
03 06 13 35	CMP	Go ahead.
03 06 13 37	CC	Roger. We would like to ask you to stop using AUTO OPTICS on the pseudo landing site. It's necessary that we send you up a P27 to update the RLS values stored in the computer. Over.
03 06 13 54	CMP	Roger. I found ... I went to MANUAL OPTICS on B1.
03 06 14 01	CC	Roger. Understand.
03 06 16 44	CC	Apollo 8, Houston. Over.
03 06 16 49	CDR	Go ahead, Houston.
03 06 16 51	CC	Roger. If you would go to P00 and ACCEPT, please, we are going to send you a P27 load which will update an RLS value which will be followed by a procedural change, Jim, we will give you later; and AUTO OPTICS should be working shortly.
03 06 17 12	CMP	Roger. Or I could use no landmark AUTO OPTICS instead of the code.
03 06 17 31	CC	Apollo 8, Houston. We are also sending you up a state vector update at the same time.

03 06 17 39	CMP	Okay. We will be expecting that.
03 06 18 14	CC	Apollo 8, Houston. We're taking the DSE for a dump. Over.
03 06 18 31	CC	Apollo 8, Houston. Over.
03 06 18 36	CMP	Go ahead, Houston.
03 06 18 38	CC	Roger. We would like to take Bill's DSE for a dump. Over.
03 06 18 44	CMP	Roger. Go ahead.
03 06 18 46	CC	Thank you.
03 06 24 33	LMP	Houston, Apollo 8. We're ready for the - your updates, your PAD's.
03 06 24 38	CC	Apollo 8, Houston. Roger. I have updates, a map update for REV 5/6, and TEI 6 update. Which would you like first?
03 06 24 51	LMP	Okay. I've got the map update page now. Why don't you give me that one?
03 06 24 55	CC	Okay. Map update for REV 5/6. LOS 78:58:49, sunrise 79:08:07, prime meridian 79:14:30, AOS 79:44:36, sunset 80:21:05; IP-1, time of closest approach to target B1 80:09:08. Now your two new control points that Jim gave us: control point number 1, acquisition 79:10:32, control point number 2, acquisition 79:23:14. Over.
03 06 26 16	LMP	Roger. Copy. Ready for the TEI.
03 06 26 26	CC	Okay, Bill. Before we read the big TEI update here, I'd like to give Jim briefly a procedure

for P22. When he comes to NOUN 89, we request that he do a VERB 34 ENTER. Do not proceed, and by so doing then, he will not incorporate the lat and longitude from his mark, and he will not change the reference value of the landing site, and we will solve this AUTO OPTICS problem. Over.

03 06 27 08 CMP Let me see if I have this correct, Mike. When flashing 0689 comes up with the latitude and longitude information, I will not proceed but will go to VERB 34 and terminate. Is that correct?

03 06 27 24 CC Yes, that is affirmative. Do a VERB 34 ENTER instead of a PROCEED. And that will -

03 06 27 34 CMP Alright. Is this technique true?

03 06 27 45 CMP Houston, is this technique true for both the node control point AUTO OPTICS on P25?

03 06 27 52 CC Stand by one, Jim.

03 06 27 54 CMP And the len ...

03 06 28 09 CC That is affirmative, Apollo 8. That is always true.

03 06 28 16 CMP Okay. Roger. True for the code AUTO OPTICS and no landmark. I'll proceed instead of going on - or I'll use 34 instead proceding on 89.

03 06 28 25 CC Roger. Thank you, Jim, and I have the TEI 6 hour when you are ready - or TEI number 6.

03 06 28 45 CDR Go ahead.

03 06 28 52	LMP	Ready to copy.
03 06 28 54	CC	Roger. I'm glad you are ready to copy TEI number 6. I've got one last comment for Jim before you do so. The VERB 89 - or correction - the NOUN 89 we are talking about is the one that he gets after marking. There are two NOUN 89's, one prior to marking and one after, and our procedure references NOUN 89 after marking. Over.
03 06 29 21	CMP	Roger. Understand.
03 06 29 24	CC	Thank you, and, Bill, you still ready to copy?
03 06 29 29	LMP	Ready to copy, Mike.
03 06 29 31	CC	TEI 6, SPS/G&N: 45701, minus 040, plus 157. Are you with me so far?
03 06 29 56	LMP	Roger.
03 06 29 57	CC	081 21 24 43, plus 31776, minus 00823, minus 01365 180 016 001, not applicable, plus 00188. Are you still with me? Over.
03 06 31 56	LMP	That's Roger.
03 06 31 57	CC	Good. 31816 302 31624 40 2699 396 033, down 054, left 21, plus 0810 control minus 16500 12968 36222 146 42 04; GDC align remains the same; Sirius and Rigel, roll 129, pitch 155, yaw 010, ullage four quads for 15 seconds; horizon on 6-degree line at TIG minus 3 minutes. Over.
03 06 32 46	LMP	Roger, Houston. TEI 6, SPS/G&N: 45701, minus 040, plus 157 018 21 2443, plus 31776, minus 00823,

minus 01365 180 016 001, NA, plus 00188 31816 302 31624 40 2699. · Are you with me?

03 06 33 39 CC Yes, I'm with you, Bill.

03 06 33 44 LMP 396 033, down 054, left 21, plus 08 10 minus 16500 129 68 36222 146 42 04; same GDC align; Sirius and Rigel, 129 155 010, four jet, 15 seconds, horizon 6 degrees, TIG minus 3. Over.

03 06 34 27 CC Roger, Bill. On your ignition time, GETI is 81 hours, 081. Over.

03 06 34 39 LMP Roger. Got it, 081.

03 06 34 42 CC Thank you, sir.

03 06 34 46 LMP Thank you, Michael. As a matter of interest, these side windows are so hazy that when the sun shines on them, they just about - they are real poor for any visual observation or photography- heads-up.

03 06 35 04 CC Roger. Understand.

03 06 36 30 CC Apollo 8, Houston. Over.

03 06 36 36 CMP Go ahead, Houston.

03 06 36 37 CC Roger. The last state vector updates we sent you, Jim, was to the LM slots, and you will have to transfer that over to the CSM slots using VERB 47 ENTER. Over.

03 06 36 52 CMP Roger. Will do.

03 06 36 54 CC Thank you.

03 06 38 16 CC Apollo 8, Houston.

03 06 38 21	CMP	Go ahead, Houston.
03 06 38 23	CC	Roger. Bill has got his tape recorder back, and we noticed during that last dump, it was all in low bit rate. We wonder whether that was intentional or not? Over.
03 06 38 42	LMP	Roger. We didn't have much to say; we couldn't see out of the windows very well, Mike.
03 06 38 47	CC	Roger. Understand. Thank you, Bill.
03 06 38 53	LMP	It was really too bad.
03 06 40 31	CC	Apollo 8, Houston. - -
03 06 40 38	LMP	Go ahead - -
03 06 40 39	CC	Roger, Bill. This next time around into the sunlight, we do not expect any problem with the primary evaporator. If it does start drying out, we think it is best just to close the back pressure valve, and there is no need to activate the secondary boiler. Over.
03 06 41 02	LMP	Okay. I guess the 60-degree limit will still hold then.
03 06 41 12	CC	Stand by.
03 06 41 40	CC	Apollo 8, Houston. We are suggesting you disregard the 60 degree limit, and let it go ahead and rise up above 60. There is no need to activate the secondary. Over.
03 06 41 54	LMP	Okay. We just don't want to boil our IMU.
03 06 41 57	CC	Roger. Understand then. Apollo 8, you are GO for the next lunar orbit REV.

03 06 42 06	LMP	Roger, Houston.
03 06 42 11	CMP	Roger, Houston. I'll read the book this time.
03 06 42 14	CC	Roger.
03 06 54 08	CC	Apollo 8, Houston. Over.
03 06 54 13	CMP	Go ahead, Houston. Apollo 8 - -
03 06 54 16	CC	Roger. We have about 4-1/2 minutes left before we have LOS; we'd like your last PRD readout. Over.
03 06 54 29	CMP	Stand by. The commander is asleep; we'll get his when he wakes up. The LMP is still 6 ... 0.64, C is 9, CMP is 0.09.
03 06 55 07	CC	Roger. Copy 0.64, 0.09. Thank you.
03 06 58 04	CC	Apollo 8, Houston. About 40 seconds to LOS, and everything's looking good down here.
03 06 58 14	CMP	Roger. Houston. We will give it another try here.
03 06 58 19	CC	Roger.

END OF TAPE

APOLLO 8 AIR-TO-GROUND VOICE TRANSCRIPTION

(GOSS NET 1)

03 07 28 XX		BEGIN LUNAR REV 6
03 07 45 36	CC	Apollo 8, this is Houston. Over.
03 07 46 32	CC	Apollo 8, this is Houston. Over.
03 07 47 16	CC	Apollo 8, this is Houston. Over.
03 07 48 43	CC	Apollo 8, this is Houston. Over.
03 07 51 56	CC	Apollo 8, this is Houston. Over.
03 07 52 05	LMP	Houston, Apollo 8. Over.
03 07 52 07	CC	Reading you very weak but - a lot of background noise. Welcome back around. How are you reading us?
03 07 52 18	LMP	Reading you fine.
03 07 52 20	CC	Okay.
03 07 55 43	CMP	Houston, Apollo 8.
03 07 55 45	CC	Apollo 8, Houston. Go ahead.
03 07 55 51	CMP	Roger, Houston. A few words on our optics tracking system. I used AUTO OPTICS for control points 1 and 2 on the backside, and they worked beautifully, tracked both the targets for me. And I went to the control point 3 as designated in our orbital control book to see the latitude and longitude that was given to me and used AUTO OPTICS to track that particular coordinate system, and it was very close to the actual tracking plot. I picked the mark there where I did a final marking and recorded latitude and longitude. I'm now about to come up on the landing site and using AUTO OPTICS in the coded input to see how that works.

03 07 56 57	CC	Roger, Apollo 8.
03 07 59 28	CC	Apollo 8, Houston.
03 07 59 34	LMP	Go ahead.
03 07 59 35	CC	Roger. We know you're busy so we are not going to bother you. We are watching your progress on the DSKY. You are looking good; all your systems are looking good, and we have maneuver PAD's for you any time at your convenience.
03 07 59 52	LMP	Roger. We will take them when we are doing the P52, if that's okay.
03 07 59 56	CC	That is just fine.
03 08 07 56	LMP	Mike, Apollo 8.
03 08 07 58	CC	Apollo 8, go ahead.
03 08 08 03	CMP	Mike, there are an awful lot of objects down on the landing site. It would just warm up Jack Schmidt's heart. The AUTO OPTICS are tracking perfectly on the target, and the two high peaks stand out beautifully. I have a beautiful view of it. The first I've seen just barely beneath the vertical now, and the second one coming up - It's just a grand view!
03 08 08 28	CC	Roger, Jim. Glad to hear it. Jack's listening.
03 08 09 45	CMP	Jack, the information - The triangles that we see now are from the first IB, second IB, and the B1 are just right, I think, for landing conditions. The shadows aren't too deep for you to get confused,

but the land has texture to it, and there are enough shadows there to make everything stand out.

03 08 10 01 LMP If Jack's listening, tell him that the optical may be doing all right, but the eyeball is having a little trouble looking through all this smear on the windows.

03 08 10 25 CC Roger. Understand the optics are doing better than the eyeballs. How about the cameras?

03 08 10 33 LMP We always have the same smear to look through. The rendezvous windows are okay, but they're so small and looking in the wrong directions here so far.

03 08 10 42 CC Roger.

03 08 10 43 LMP I think the vertical stereo will be okay.

03 08 11 10 LMP It certainly looks like we're picking the more interesting places on the moon to land in. The backside looks like a sand pile my kids have been playing in for a long time. It's all beat up, no definition. Just a lot of bumps and holes.

03 08 11 27 CMP I'm looking at 2P-2 right now, Houston, and it's a great spot.

03 08 11 33 LMP The area we're over right now gives some hint of possible volcanic, though I really can't eyeball it at the moment to pin that down. There are some craters and buildups that just definitely suggest volcanic activity.

03 08 11 52 CC Roger. Understand, Bill, and understand Jim thinks the old 2P-2 is a winner.